[Titian, and Group from his Venus and Adonis.]

ESSAYS ON THE LIVES OF REMARKABLE PAINTERS.—No. XL.

Titian: born A.D. 1477, died A.D. 1576.

Tiziano Vecelli was born at Cadore in the Friuli, a district to the north of Venice, where the ancient family of the Vecelli had been long settled. There is something very amusing and characteristic in the first indication of his love of art; for while it is recorded of other young artists that they took a piece of charcoal, or a piece of slate to trace the images in their fancy, we are told that the infant Titian, with an instinctive feeling, prophetic of his future excellence as a colourist, used the expressed juice of certain flowers to paint a figure of a Madonna. When he was a boy of nine years old his father Gregorio carried him to Venice and placed him under the tuition of Sebastian Zuccato, a painter and worker in mosaic. He left this school for that of the Bellini, where the friendship and fellowship of Giorgione seem early to have awakened his mind to new ideas of art and colour. Albert Durer, who was at Venice in 1494, and again in 1507, also influenced him. At this time, when Titian and Giorgione were youths of eighteen and nineteen, they lived and worked together. It has been already related that they were employed in painting the frescos of the Fondaco dei Tedeschi; the preference being given to Titian's performance, which represented the story of Judith, caused such a jealousy between the two friends, that they ceased to reside to-

gether; but at this time and for some years afterwards the influence of Giorgione on the mind and the style of Titian was such that it became difficult to distinguish their works; and on the death of Giorgione, Titian was required to complete his unfinished pictures.

This great loss to Venice and the world left Titian in the prime of youth without a rival. We find him for a few years chiefly employed in decorating the palaces of the Venetian nobles, both in the city and on the main land. The first of his historical compositions which is celebrated by his biographers is the "Presentation of the Virgin in the Temple," a large picture, now in the Academy of Arts at Venice; and the first portrait recorded is that of Catherine, Queen of Cyprus, of which numerous repetitions and copies were scattered over all Italy: there is a fine original in the Dresden Gallery. This unhappy Catherine Cornaro, the "daughter of St. Mark," having been forced to abdicate her crown in favour of the Venetian State, was at this time living in a sort of honourable captivity at Venice. She had been a widow for forty years, and he has represented her in deep mourning holding a rosary in her hand—the face still bearing traces of that beauty for which she was celebrated.

It appears that Titian was married about 1512; but of his wife we do not hear anything more. It is said that her name was Lucia, and we know that she bore him three children, two sons, and a daughter called Lavinia.

The next work on which Titian was engaged was the decoration of the convent of St. Antony at Padua, in which he executed a series of frescos from the life of St. Antony. He was next summoned to Ferrara by the Duke Alphonso I., and was employed in his service for at least two years. He painted for this prince the beautiful picture of "Bacchus and Ariadne," which is now in our National Gallery, and which presents on a small scale an epitome of all the beauties which characterise Titian, in the rich, picturesque, animated composition, in the ardour of Bacchus, who flings himself from his car to pursue Ariadne, the dancing bacchanals, the frantic grace of the bacchante, and the little joyous satyr in front, trailing the head of the sacrifice. He painted for the same prince two other festive subjects, one a bacchanalian dance, in which a nymph and two men are dancing, while another nymph lies asleep. The third is called the "Sacrifice to the Goddess of Fertility;" a number of children and cupids are sporting round a statue of Venus. There are here upwards of sixty figures in every variety of attitude, some fluttering in the air, some climbing the fruit trees, some shooting arrows, or embracing each other. This picture, while it remained in Italy, was a study for the first painters, for Poussin, the Carracci, Albano; and Fiamingo the sculptor, so famous for his models of children. These two last-named pictures are now at Madrid.* At Ferrara, Titian also painted the portrait of the first wife of Alphonso, the famous and infamous Lucretia Borgia; and here also he formed a friendship with the poet Ariosto, whose portrait he painted.

At this time he was invited to Rome by Leo X., for whom Raphael, then in the zenith of his powers, was executing some of his finest works. It is curious to speculate what influence these two distinguished men might have exercised on each other had they met; but it was not so decreed. Titian was strongly attached to his home and his friends at Venice; and to his birthplace, the little town of Cadore, he paid an annual summer visit. His long absence at Ferrara had wearied him of courts and princes, and, instead of going to Rome to swell the luxurious state of Leo X., he returned to Venice and remained there stationary for the next few years, enriching its palaces and churches with his magnificent works. These were so numerous that it would be in vain to attempt to give an account even of those considered as the finest among them. Two however must be pointed out;—first, the Assumption of the Virgin, now in the academy of the fine arts at Venice, and well known from the magnificent engraving of Schiavone. The Virgin is soaring to heaven amid groups of angels, while the apostles gaze upwards. And, secondly, the Death of St. Peter Martyr when attacked by assassins at the entrance of a wood. The resignation of the prostrate victim and the ferocity of the murderer;—the attendant flying "in the agonies of cowardice," with the trees waving their distracted boughs amid the violence of the tempest, have rendered this picture famous as a piece of scenic poetry as well as of dramatic expression. The next event of Titian's life was his journey to Bologna in 1530. In that year the Emperor Charles V. and Pope Clement VII. met at Bologna, each surrounded by a brilliant retinue of the most distinguished soldiers, statesmen, and scholars of Germany and Italy. Through the influence of his friend Aretino, Titian was recommended to the Cardinal Hypolito de' Medici, the Pope's nephew, through whose patronage he was introduced to the two potentates who sat to him; one of the portraits of Clement VII., painted at this time, is now in the Bridgewater Gallery. Charles V. was so satisfied with his portrait that he became the zealous friend and patron of the painter. It is not precisely known which of several portraits of the emperor painted by Titian was the one executed at Bologna on this memorable occasion, but it is supposed to be that which represents him on horseback charging with his lance, now in the Royal Gallery at Madrid; of which Mr. Rogers possesses the original study. The two portraits of Hypolito de' Medici in the Pitti Palace and the Louvre were also painted at this time.

Titian returned to Venice loaded with honours and rewards. There was no potentate, prince, or poet, or reigning beauty who did not covet the honour of being immortalised by his pencil. He had up to this time managed his worldly affairs with great economy, but now he purchased for himself a house opposite to Murano, and lived splendidly, combining with the most indefatigable industry the liveliest enjoyment of existence; his favourite companions were the architect Sansovino and the witty profligate Pietro Aretino. Titian has often been reproached with his friendship for Aretino, and nothing can be said in his excuse, except that the proudest princes in Europe condescended to flatter and caress this unprincipled literary ruffian, who was pleased to designate himself as the "friend of Titian, and the scourge of princes." One of the finest of Titian's portraits is that of Aretino in the Munich Gallery.

Thus in the practice of his art, in the society of his friends, and in the enjoyment of the pleasures of life, did Titian pass several years. In 1540 died Licinio Regillo, better known as Pordenone, the only painter of his time who was deemed worthy of competing with him. Between Titian and Pordenone there existed not merely rivalry, but a personal hatred, so bitter that Pordenone affected to think his life in danger, and when at Venice painted with his shield and poniard lying beside him. As long as Pordenone lived, Titian had a spur to exertion, to emulation; all the other good painters of the time, Palma, Bonifazio, Tintoretto, were his pupils or his creatures; Pordenone would never owe anything to him; and the picture called the St. Justina, at Vienna, shows that he could equal Titian on his own ground. After the death of Pordenone at Ferrara, in 1539, Titian was left without a rival; everywhere in Italy

* A good copy of the last used to hang in the dark at Hampton Court, and has been lately removed to Windsor.

art was on the decline; Lionardo, Raphael, Correggio, had all passed away. Titian at the age of sixty retained all the vigour and the freshness of youth: neither eye nor hand, nor creative energy of mind, had failed him yet. He was again invited to Ferrara, and painted there the portrait of the old Pope Paul III. He then visited Urbino, where he painted for the duke that famous Venus which hangs in the Tribune of the Florence Gallery, and many other pictures. He again, by order of Charles V., repaired to Bologna, and painted the emperor, standing, and by his side a favourite Irish wolf-dog; this picture was given by Philip IV. to our Charles I., but after his death was sold into Spain, and is now at Madrid.

Pope Paul III. invited him to Rome, whither he repaired in 1548. There he painted that wonderful picture of the old pope with his two nephews, the Duke Ottavio and Cardinal Farnese, which is now at Vienna. The head of the pope is a miracle of character and expression: a keen-visaged, thin little man, with meagre fingers like birds'-claws, and an eager cunning look, riveting the gazer like the eye of a snake—nature itself!—and the pope had either so little or so much vanity as to be perfectly satisfied; he rewarded the painter munificently; he even offered to make his son Pomponio, Bishop of Ceneda, which Titian had the good sense to refuse. He painted also several pictures for the Farnese family, among them the Venus and Adonis, of which a repetition is in our National Gallery, and a Danaë which excited the admiration of Michael Angelo. At this time Titian was seventy-two.

He next, by command of Charles V., repaired to Augsburgh, where the emperor held his court; eighteen years had elapsed since he first sat to Titian, and he was now broken by the cares of government,—far older at fifty than the painter at seventy-two. It was at Augsburgh that the incident occurred which has been so often related: Titian dropped his pencil, and Charles taking it up and presenting it, replied to the artist's excuses that "Titian was worthy of being served by Cæsar." This pretty anecdote is not without its parallel in modern times. When Sir Thomas Lawrence was painting at Aix-la-Chapelle, as he stooped to place a picture on his easel, the Emperor of Russia anticipated him, and taking it up adjusted it himself; but we do not hear that he made any speech on the occasion. When at Augsburgh Titian was ennobled and created a count of the empire, with a pension of two hundred gold ducats, and his son Pomponio was appointed canon of the cathedral of Milan. After the abdication and death of Charles V., Titian continued in great favour with his successor Philip II.; for whom he painted several pictures. It is not true, however, that Titian visited Spain: the assertion that he did so rests on the sole authority of Palomino, a Spanish writer on art, and though wholly unsupported by evidence, has been copied from one book into another. Later researches have proved that he returned from Augsburgh to Venice: and an uninterrupted series of letters and documents, with dates of time and place, remain to show that, with the exception of this visit to Augsburgh and another to Vienna, he resided constantly in Italy and principally at Venice, from 1530 to his death. Notwithstanding the compliments and patronage and nominal rewards he received from the Spanish court, Titian was worse off under Philip II. than he had been under Charles V.; his pension was constantly in arrears; the payments for his pictures evaded by the officials; and we find the great painter constantly presenting petitions and complaints in moving terms, which always obtained gracious but illusive answers. Philip II., who commanded the riches of the Indies, was for many years a debtor to Titian for at least two thousand gold crowns; and his accounts were not settled at the time of his death. For our Queen Mary of England, who wished to patronise one favoured by her husband, Titian painted several pictures, some of which were in the possession of Charles I.: others had been carried to Spain after the death of Mary, and are now in the Royal Gallery at Madrid.

[To be continued.]

CHAUCER'S CANTERBURY TALES.

The Wife of Bath's Tale—*Concluded.*

There was neither joy nor feasting upon the knight's wedding-day; but only heaviness and much sorrow. The knight concealed himself from all society,

> So woe was him his wife lookèd so foul.

She, however, smiled constantly upon him, saying—

> "I am your owen love, and eke your wife,
> I am she which that savèd hath your life.
> * * * * * *
> Ye faren like a man had lost his wit.
> What is my guilt? for Goddes love tell it,
> And it shall be amended if I may."
> "Amended!" quoth this knight, "alas! nay, nay,
> It will not be amended never mo;
> Thou art so loathly, and so old also,
> And thereto comen of so low a kind;

Would to God that my heart would burst." "Is this," quoth she, "the cause of your uneasiness?" "Yes, certainly," said he, "and no wonder." "Now, sir," she returned, "I could mend all this, if I pleased, within three days, could you but conduct yourself right toward me. But as for the gentleness* ye speak of, the offspring of wealth, it is but worthless arrogance. Look who it is that is most virtuous at all times, who most intendeth

> To do the gentle deedes that he can;
> And take *him* for the greatest gentleman.

Christ wills us derive our gentleness from him, not from the wealth of our ancestors, who, though they may give us all their inheritance and lineage,

> Yet may they not bequeathen, for no thing
> To none of us their virtuous living.

Every one knows as well as I that were gentleness planted naturally by regular line of descent, then would its possessors never cease to do the fair offices that belong to it: neither would they commit any vicious nor villainous act.

> Take fire, and bear it into the darkest house
> Betwixt this and the Mount of Caucasus,
> And let men shut the doorès, and go thenne,
> Yet will the fire as faire lie and brenne
> As twenty thousand men might it behold;
> His office natural aye will it hold.

Here you may see that gentleness is not annexed to possession, since people do not, like the fire, perform at all times the works that belong to it. God knows, men may often find a lord's son doing shameful and villainous acts; so that the man who will be praised and esteemed inasmuch as that

> he was boren of a gentle house,
> And had his elders noble and virtuous,
> And n'ill himselven do no gentle deedes,
> Ne follow his gentle ancestry, that dead is,
> He is not gentle, be he duke or earl.

* Or gentility

And therefore, dear husband, I come to this conclusion, that although my ancestors were rude, yet may God give me, as I hope, grace to live virtuously; and

> Then am I gentle, when that I begin
> To liven virtuously, and waiven sin.

As to the poverty for which you reprove me, the Divine Being in whom we believe chose to lead a life of wilful poverty; and certainly, Jesus would not choose a vicious mode of living. Glad poverty is an honest thing; and I hold him rich who is satisfied however little he hath: whilst

> He that coveteth is a poore wight.

Juvenal merrily sung of poverty,

> The poore man when he go'th by the way,
> Before the thieves he may sing and play.

Poverty, however strange it may seem, is a possession that no man will challenge. Poverty

> full often, when a man is low,
> Maketh his God and eke himself to know:
> Povért' a spectacle is, as thinketh me,
> Through which he may his very* friendes see;

Therefore, Sir, reprove me no more for my poverty.

And now, Sir, of my age, with which you find fault. Gentlemen of honour say that men should reverence old men, and call them father.

And when ye say I am old and foul, then ye need not dread that I shall be unchaste to you. But choose now, she said, one of these two things; to have me thus old and foul until I die,

> And be to you a trué humble wife,
> And never you displease in all my life,
> Or elles will ye have mé young and fair,
> And take your áventure?

The knight considers, sighing the while deeply, but at last he said,

> "My lady and my love, and wife so dear,
> I put me in your wisé governance,
> Chooseth yourself which may be most pleasánce
> And most honour to you and me also.

I care not which of the two. It shall suffice me as you like to determine."

> "Then have I got the mastery," quoth she,
> "Since I may choose and govern as me lest."
> "Yea, certes, wife," quoth he, "I hold it best."
> "Then," quoth she, "we be no longer wroth,
> For by my troth I will be to you *both*:
> This is to say, yea, bothe fair and good.
> I pray to God that I might starven wood,†
> But I to you be all so good and true
> As e'er was wife since that the world was new.
> And but I be to-morrow as fair to seen
> As any lady, emperess, or queen,
> That is betwixt the east and eke the west
> Do with my life and death right as you lest.
>
> Look upon me!"

> And when the knight saw verily all this,
> That she so fair was, and so young thereto,
> For joy he hent‡ her in his armes two:
> His hearte bathéd in a bath of bliss.

And she from that time forward

> obeyéd him in every thing
> That mighte do him pleasance or liking,
> And thus they live unto their lives' end
> In perfect joy.

* True, or real. † Die mad. ‡ Held, clasped

LOCOMOTION OF ANIMALS.—No. XVI.

Flying continued.—Fishes, being adapted by their structure to move and respire in the dense fluid of seas and rivers, are not constituted for flying. There appear to be only two species of fish endowed with the power of suspending themselves above the surface of the water; namely, the Dactylopterus, and the Exocetus, or flying fish.

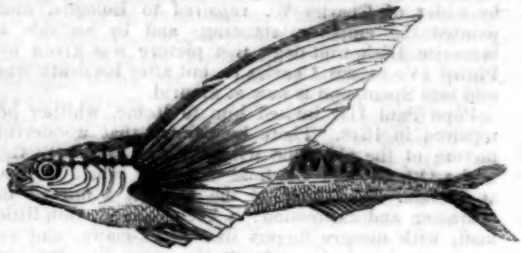

Fig. 1.

In the Exocetus we observe that the pectoral fins assimilate very nearly in figure, situation, and dimensions, to the wings of birds; and if, with the velocity and inclination of the latter, they possessed the power of oscillation, there seems to be no reason why they should not keep in the air as long as they could respire in that medium. But this does not appear to be the case. Their motions have been observed by Mr. Bennett, who states that he never saw them sustain themselves in the air for a longer period than about thirty seconds, and that they made no vibratory movements of the fins. According to Captain Basil Hall, their longest flight is about two hundred yards; and they have been known to raise themselves as high as twenty feet above the surface of the water. From these statements an estimate may be made of the amount of force required to project the body into the air to such an amazing height and distance. At least it must be concluded that the muscular force employed is very great.

INSECTS.—Amongst the numerous tribes of insects, there are vast multitudes endowed with the power of flight. Now, although the mechanical principles on which this power depends are the same as those in birds, yet there is a considerable difference in the mechanism employed to effect their aërial progression.

The bodies of insects are traversed by air-tubes, which render them light and buoyant. The jointed structure of their frame enables the animal to curve, shorten, or elongate the body on itself. The wings present various forms (*Fig.* 2, *a*, *b*, *c*, *d*, *e*, *f*), which

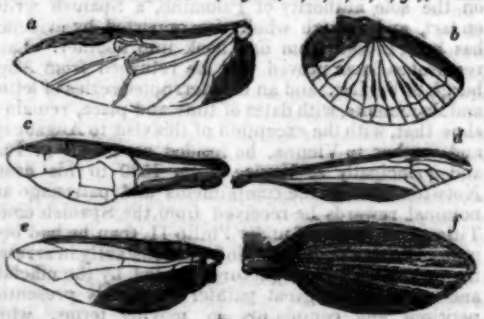

Fig. 2.

exert a materia. influence on the velocity and mode of their flight. It is well known that some insects are pro-

vided with one pair of wings, and others with two. If we examine the surface of the wings, we perceive cords, which are composed of hollow tubes passing across the disc; these are called neuræ, and, when filled with fluid, confer on the wing strength and resistance, in the same manner as the cordage strengthens the sails of a ship. The wings are elevated and depressed by means of the expansion and contraction of the thorax, and are connected with the respiratory movements of the animal. The Diptera have one pair of wings, which are elliptical in form, and connected with the mesothorax. Amongst the Diptera, we are familiar with the house fly, and the blue-bottle fly.

Fig. 8.

Fig. 3.

The former of these, it is well known, almost swarm in our houses, wherever sugar or ripe fruits are to be found. If an attempt be made to capture them by the hand, it is necessary that the movements should be made with the greatest rapidity in order to effect the object, as they are very watchful and agile.

The wings of the Diptera move far too rapidly to render it possible to count the number of strokes effected by them during flight. The house fly moves with considerable velocity; it is frequently observed to play round the ears of horses, when travelling at the rate of ten or twelve miles an hour. The sound by which the flight of insects is accompanied does not arise, as is generally supposed, from the oscillations of the wing: if such were the case, there would be no difficulty in ascertaining the number of strokes.

The weight of the large blue-bottle fly is less than one grain, and it has an area of wing amounting to about one-twelfth of a square inch, which is a much greater surface than is to be found in most other insects.

The Diptera are provided with two poisers, which are small bodies occupying the situation of the posterior wings of four-winged insects, and exert a considerable influence on their flight. It is said that if one poiser be cut off, the insect flies but a short distance with great difficulty, and then (one side being rendered lighter than the other) loses its balance, and falls to the ground. If both poisers be removed, it flies very unsteadily. The crane fly makes use of its long legs to direct its movements in flight; the two anterior legs being directed forwards, and the posterior legs backwards. Mr. Kirby considers the former to represent the prow, and the latter the stern of a ship.

In those insects which are provided with four wings, the anterior pair are attached to the mesothorax, and the posterior pair to the metathorax. In the Coleoptera, the elytrum, or sheath, must be elevated before the wings can be unfolded. The sheath adds weight to the insect, without contributing to aid its suspension in the air; indeed, in flying against the wind, the progress of the animal is rather retarded than accelerated by the sheath; but, by the inclination of its surface the head is elevated so as to render the axis of the body nearly vertical during flight.

In the Stag-beetle, the weight of the body is very great compared with the area of the wing, being about forty grains to 1·25 square inch. In consequence of this disproportion, and the additional impediment of the elytra, the Coleoptera are unable to fly against a strong wind. Some entomologists maintain that none of the Coleoptera can fly against the wind, but Mr. Kirby confutes this opinion, and mentions a species (the Melolontha Hoplia) which, he says, can fly in all directions.

The Dermaptera, such as the earwigs, expand their wings like a fan. They take their flight generally towards the evening. The Gryllus Domesticus, or house cricket, flies with an undulatory motion like the woodpecker.

The diurnal Lepidoptera, or butterflies, fly with a peculiar undulatory movement of the body, and have an enormous surface of wing compared with their weight. In the down stroke the two wings on each side lock together, producing by their combined action a greater effect. These wings spread out like a fan, and their surface rather increases than decreases as the distance from the axis on which the wings move increases (*Fig.* 4). It is this figure, and extent of

Fig. 4.

motion, which produce the undulating flight to which allusion has already been made.

Although in the diurnal Lepidoptera the surface of the wings is so great with respect to the weight of the body, these insects do not fly with proportionate velocity; but are, nevertheless, endowed with sufficient speed to outstrip the schoolboy, when engaged in the chace of these beautiful insects.

Nocturnal Lepidoptera. The moths possess considerable power of flight. The areas of their wings, instead of increasing with the distance from the axis of motion, decrease, as seen in *Fig.* 5. They more nearly resemble the triangular figure of the wings of birds. The anterior wing is much larger than the posterior, but they act in unison with each other. The volume of the trunk of the moths is usually much greater than that of the diurnal Lepidoptera, and they fly with greater precision and velocity. Some species, the silkworm moth for instance, is said to travel upwards of one hundred miles a day.

The *Neuroptera*. The Dragon fly affords a good example of the locomotive organs of this class of insects. They are furnished with four wings of a peculiarly delicate texture, the neura resembling net-

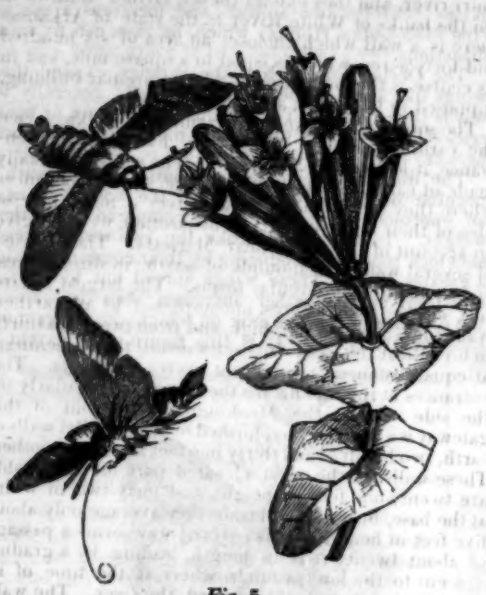

Fig. 5.

work (*Fig.* 6). Unlike the Lepidoptera, the two wings on either side, being provided with a distinct

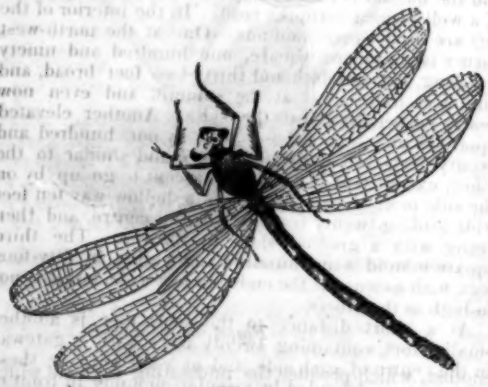

Fig. 6.

set of muscles, act independently of each other, and are detached. The anterior and posterior wing are nearly equal in size, and the surface of the four wings, compared with the weight of the body, is greater than in the Coleoptera and Hymenoptera. The velocity of the dragon-fly is very great, and necessary on account of its predaceous habits. They chase and capture the insect on which they feed with great ease, and the beauty and rapidity of their evolutions in the chace are worthy of attentive consideration. Leuwenhoeck observed one of this tribe in a menagerie two hundred feet in length, chased by a swallow. The insect flew with such velocity, and turned to the right and left in all directions so instantaneously, that the swallow, with all its powers of flight, and tact in the chace, was unable to capture it, the insect always keeping about six feet in advance of the bird. The wings are attached to the upper part of the body, about the centre of gravity, by which the animal is kept steady during flight.

In the Hymenoptera, the ratio of the area of the four wings to the weight of the body is less than in the dragon fly (*Fig.* 7); and they are consequently obliged

Fig. 7.

to make a far greater number of strokes in the same interval of time; because, both in birds and insects, when all other things remain the same, the number of strokes made by the wings will vary as the square root of the weight directly, and as the area of the wings inversely

The area of the anterior and upper wings (*Fig.* 8, *a*) is much greater than that of the posterior. The humble bee has about 1-12th of a square inch of surface of wing to each grain weight of its body.

Bees are celebrated, not only for the geometric instinct which they display in the structure of their hexagonal cells so as to provide themselves with the greatest amount of room in the hive, whilst occupying the least possible space, but they are also known to fly between two distant points by the shortest road, —that is, by the straight line. In consequence of the small amount of the surface of wing in the hymenoptera, the humble bee, wasp, and hornet cannot fly with much speed against a strong wind; and in that direction the fleet schoolboy is enabled with ease to outstrip them. The ichneumoneæ are provided with a larger surface of wing, as compared to the weight of the body, than the bees.

The mechanism of the locomotive organs of birds and insects provides us with all the data necessary for the study of aërial progression. It affords ample proof that to render a man whose weight is a hundred and fifty pounds, capable of supporting himself in the air by means of a pair of artificial wings, with the same facility as birds and insects, would require an extent of surface far beyond the control of his muscular force; and hence we conclude that the art of flying by means of muscular exertion, however applied, is denied to man.

In the papers now brought to a conclusion, the author has endeavoured to render the subject as popular as the nature of the subject permitted; on which account he has avoided numerous technicalities, and anatomical details, as well as mathematical proofs, which would have embarrassed and retarded the progress of the general

reader. It has been seen that the laws which govern the locomotion of animals are of the same nature as those which regulate the solar system. The study of these organs may serve to instruct us in the art of making self moving machines. In contemplating the manifold kinds of instruments by means of which animals move, we are naturally led to reflect on the goodness of a beneficent Creator, who has most largely endowed the animal world with the power of exercising a function so necessary to life and enjoyment as locomotion.

AMERICAN ANTIQUITIES.

In two of our previous numbers (733 and 762) we have given an account of what is now considered the earliest discovery of America, and of what is thought to be an ancient building constructed by the first European discoverers. We now propose to give an account of some other antiquities of the American continent, the New World as it was formerly called, which, though their origin and date are uncertain, are clearly the works of a people advanced in civilization, in the arts, and some of which are of a period very considerably prior to the discovery of Columbus. Our account is slightly abridged from the 'Supplement to the Penny Cyclopædia.'

Nearly all those yet made known to us are in the northern division of the continent, and certainly the most important, though probably many are yet undiscovered in South America, as those already found in Quito and Peru prove the possession of a distinct style of architecture, and are of a sort that are not likely to have been solitary productions.

These remarkable antiquities are of two descriptions: they are either fortifications or mounds. The fortifications are not found to the east of the Appalachian Mountains; but on the west of them they occur in many places. The most eastern are in New York, on the banks of Black River, which falls into Lake Ontario at its eastern extremity; but here, as well as in the Genesee county and other parts of New York, they are small and difficult to trace. Farther west two extensive systems of fortifications may be traced. One extends over the southern portion of the state of Ohio, and is enclosed on the east by the course of the river Muskingum, and on the west by the Miami. The most northern fortifications extend into the county of Licking, to the vicinity of the place where the Muskingum river originates. Near Newark in Licking there are four forts, enclosing from twenty to forty acres each, and consisting of earthen walls from eight to thirty feet high. Two of these forts are perfect circles, one a perfect square, and the fourth is an octagon. These forts are severally connected by roads running between parallel walls, and communicate by similar roads with some creeks. Other less extensive fortifications are in Perry county, but those near Marietta, near the confluence of the Ohio and Muskingum, occupy a considerable space. In the valley of the Scioto a square fort with eight gateways is united to a circular fort surrounded by two walls and a deep ditch between them. The town of Circleville, in the county of Pickaway, is partly built in the circular fort. Extensive works of a similar kind exist on Paint Creek in the county of Ross, west of Chillicothe; and others at the confluence of the Scioto river and the Ohio near Portsmouth. There are several isolated fortifications to the east of the Little Miami river, and in the country between this river and the Great Miami.

The other system of fortifications occurs on the banks of the Mississippi, but we are not so well acquainted with the localities. There are several forts in the vicinity of St. Louis, on both sides of the Missouri river, and they extend thence farther southward. On the banks of White River in the state of Arkansas there is a wall which encloses an area of six hundred and forty acres, which is equal to a square mile, and in its centre is the foundation of a large circular building, supposed to have been a temple.

The square forts, like the pyramids of Mexico, face the cardinal points. When they have only one entrance, it looks towards the east. The walls are usually made of earth, but there are also one or two instances where they are of stone. To convey a more precise idea of their construction and disposition, we shall give an account of the works near Marietta. They consist of several walls and mounds of earth, in direct lines, and in square and circular forms. The largest square fort contains forty acres, encompassed by an earthen wall from six to ten feet high, and from twenty to thirty in breadth at the base. On each side are three openings, at equal distances, resembling twelve gateways. The entrances at the middle are the largest, particularly on the side next to the Muskingum. In front of this gateway is a covered way, formed of two parallel walls of earth, two hundred and thirty-one feet from one another. These walls at the most elevated part on the inside are twenty-one feet in height, and forty-two in width at the base, but on the outside they average only about five feet in height. This covered way forms a passage of about twenty rods in length, leading by a gradual descent to the low grounds, where at the time of its construction it probably reached the river. The walls commence sixty feet from the ramparts of the fort, and increase in elevation as the way descends to the river, and the bottom is rounded in the centre in the manner of a well formed turnpike road. In the interior of the fort are three square mounds. One at the north-west corner is an oblong square, one hundred and ninety feet long, one hundred and thirty-two feet broad, and nine feet high, level at the summit, and even now nearly perpendicular at the sides. Another elevated square is one hundred and fifty by one hundred and twenty feet, and eight feet high, and similar to the other, except that instead of an ascent to go up by on the side next the wall, there is a hollow way ten feet wide leading twenty feet towards the centre, and then rising with a gradual slope to the top. The third square mound is one hundred and eighty by fifty-four feet, with ascents at the ends ten feet wide, but it is not so high as the others.

At a short distance to the south-east is another smaller fort, containing twenty acres, with a gateway in the centre of each side, and at each corner; these gateways are defended by circular mounds in front of them, either within or without the enclosure. Still farther to the south-east is a mound in the form of a sugar-loaf. Its base is a regular circle one hundred and fifty feet in diameter and twenty-one rods in circumference. Its altitude is thirty feet. It is surrounded by a ditch four feet deep, fifteen feet wide, and defended by a parapet four feet high, through which is a gateway towards the fort twenty feet in width.

These fortifications are peculiar to the plains drained by the Ohio and Mississippi. In the countries bordering on Lake Erie they are of inferior size and fewer in number than in those which lie nearer the banks of the Ohio. It is believed that these mounds exist all over the countries between the Appalachian range and the Rocky Mountains, and as far south as the Gulf of Mexico. They vary greatly in their dimensions. Some are only four or five feet high and ten or twelve in diameter, whilst others rise to the height of eighty, ninety, and some more than one hundred feet, and cover many acres. Their base is round or oval, and

their shape that of a cone, but sometimes flat at the top. They are made either of stone or of earth. Many of them are in the vicinity of, and sometimes within the walls of the fortifications, and it is thought that some of them thus situated have been used as stations to discover the approach of an enemy. But it is evident that the greater number of them are sepulchral monuments. In most of the lower ones great numbers of bones have been found. In the more elevated tumuli only a skeleton or two have been found. In the monuments of the last description some utensils and trinkets are usually found, as hatchets made of stone, vases of earthenware, vases and ornaments of copper, a little iron sometimes, and sometimes a small piece of copper plated, and very rarely a little gold. One of the larger of these tumuli is found on the banks of the Ohio, twelve miles below the town of Wheeling in Virginia. Its figure is a truncated cone, measuring two hundred and ninety-five feet at the base, sixty at the top, and seventy in perpendicular height. The height appears to have been originally greater, and the form more regular. This mound was opened in 1839, and there were found in the centre two cavities, one towards the base and the other towards the top. In the lower cavity were found two skeletons in a standing position, but nothing else. In the upper cavity was a single skeleton, and along with it seventeen hundred ivory beads, five hundred small sea-shells of the volute class; sixty-six pieces of mica, each of which contained four perforations, apparently for the purpose of uniting them; and five copper bracelets or arm-bands, but without being soldered at the points of junction. None of these relics evinced any artistical talent or acquirements beyond what are possessed by existing Indian tribes. But there was also found in this mound a small elliptical stone table, with twenty-four distinct characters arranged in parallel lines. It appears that they are no letters, but hieroglyphics. Some very high tumuli are found in the neighbourhood of St, Louis, and among them are two which have two or three stages or terraces, which are considered as important in an historical point of view, as they seem to connect the antiquities, and consequently also the civilization, of the ancient tribes that inhabited the United States with those of Mexico; for these tumuli approach in shape to the teocallis of the Mexicans.

We pass to the Mexican antiquities. On the river Gila, which falls into the Rio Colorado, some large ruins are said to exist under the name of Casas Grandes. Humboldt considers these ruins as one of the temporary stations of the Azteks in their migrations from the north to the south, and he has given some account of them and the surrounding population according to the information published by two monks in 1792. These ruins have not been found since. It is true that nobody has sought for them: but the country in which they are supposed to exist has been traversed by several persons, who do not mention the high civilization of the Indian tribes inhabiting these regions. It appears that the country is uninhabited; and that being the case, ruins may escape the attention of travellers for a long time. But there are Casas Grandes in the state of Chihuahua, between 30° and 31° N. lat., where for several leagues the country is covered with the ruins of buildings, among which also some edifices of very considerable extent are met with. Numerous earthen idols somewhat resembling in style those of Egypt have been disinterred, and also jars and other articles. Humboldt considers them also as one of the stations of the Azteks, and the extent of the ruins favours his statements. The ancient buildings within the limits of the Mexican confederation are the teocallis, or houses of the gods. They are four-sided pyramids, rising by stages or terraces to a considerable elevation. When the Spaniards first visited the capital of the Azteks, they found there an immense edifice of this kind, which, however, was destroyed by the fanatic zeal of some Spanish clergymen, when the new town of Mexico was founded. There, however, still exist a considerable number of such buildings. A group of such pyramids still exists in the Vale of Mexico at Teotihuacan, about twenty miles north-east of the capital. It consists of two large pyramids which were consecrated to the sun and to the moon, and are surrounded by several hundred small pyramids, forming regular streets, which run exactly north and south or east and west. The larger of the two pyramids is more than one hundred and sixty feet in perpendicular height, and the other is more than one hundred and thirty feet high. The base of the first is nine hundred feet long. The small pyramids which surround the two grand ones are from thirty to forty feet high, and, according to the tradition of the natives, they were used as burial-places for the chiefs of the tribes. The two large teocallis have four stages or landings. The interior of these edifices consists of clay mixed with numerous small stones; but this nucleus is enclosed by a thick wall made of a kind of pumice-stone. It is stated that on the platform of these edifices two colossal statues of the sun and the moon were originally placed. East of these teocallis of Teotihuacan, and not far from the shores of the Gulf of Mexico, is the pyramid of Papantla, situated in a thick forest. The form of this teocalli, which has still six stories, but formerly had probably seven, is more tapering than any other monument of this kind yet discovered; but the height is only fifty-seven feet, and the base only twenty-five feet on each side. It is built entirely of hewn stones, of an extraordinary size and very well shaped. Three staircases lead to the top; the stages are decorated with hieroglyphical sculptures and small niches arranged with great symmetry.

[To be continued.]

Bees in the Himalayan Provinces.—In most of the villages of the northern ranges of the Himalaya bees are kept, and honey, whether the produce of the wild or domesticated bee, is an article of sale. It is commonly sold in the bazaars at four to six sears for a rupee, and although not much thicker than syrup is of a flavour equal to Narbonne, and less cloying to the stomach. There is no great demand for wax, otherwise this might be also plentifully supplied; at present the comb, after the honey is compressed, is usually thrown away. The domestic bee is known by the name of mohru, mohri, and mori; it is not much above half the size of that of Europe, but is very industrious and mild tempered. The wild bee is termed bhaonra, a name by which the people of the plains designate the humble-bee, but it is not half the bulk of that insect, though larger than the domestic bee of Europe. It is of a darker colour generally, and has longer and broader wings. Its temper is irascible and sting venomous. It commonly builds its nest under projecting ledges of rock, overhanging steep mural precipices, in a situation almost inaccessible to bears and men. The hive contains a large quantity of both wax and honey. The latter, if gathered before the month of Bhadra, is fully equal to that of the domestic bee, but in that and the following month, it is said to produce intoxication followed by stupefaction. This effect is, with some probability, ascribed to the bees feeding on the flower of a species of aconite, which is in bloom in Bhadra and Asharh, and which, growing high up the mountain, is beyond the flight of the domestic bee. There is little doubt that both the honey and wax might form valuable articles of export to the plains.—*Moorcroft and Trebeck's Travels in Bokhara.*

Would you touch a nettle without being stung by it; take hold of it stoutly. Do the same to other annoyances, and hardly will anything annoy you.—*Guesses at Truth.*